EDITORIAL COMMENT

This department of California and Western Medicine presents editorial comment by contributing members on items of medical progress, science and practice, and on topics from recent medical books or journals. An invitation is extended to every member of the California and Nevada Medical Associations to submit brief editorial discussions suitable for publication in this department. No presentation should be over five hundred words in length.

Effect of Altitude on Drug Action. — For some time empirical observation has suggested differences in drug effects due to altitude. Recently Dr. A. J. Lehman and Dr. P. J. Hanzlik of the Pharmacological Laboratory of Stanford University Medical School have furnished definite experimental evidence of a significant effect of altitude on the action of digitalis.[1] Their study has been so carefully made that there is no doubt at all regarding the validity of their conclusions: "The emetic and fatal doses of digitalis in significant numbers of pigeons were found to be 40 and 22 per cent less, respectively, at an altitude of 10,000 feet than at sea-level. A similar tendency was shown by the extremes in fatal doses for cats, but the results were inconclusive, due probably to greater variations in cats and smaller numbers used. The higher potency of digitalis at high altitudes reflects changes in state of the emetic and circulatory functions at high levels and indicates the desirability of reducing the dosage of the drug at high levels so as to avoid undesirable and toxic reactions."

Whether or not these findings, with regard to digitalis, apply to other drugs is not known with certainty, but it is very likely that any drug, if action is mediated in part by circulation or respiration, will be found to be similarly affected by altitude. These observations would seem to be of considerable significance in California, where great variations in altitude may be found in a relatively restricted area.

Clinical studies on this problem are desirable, and it remains to be determined whether or not acclimatization may alter the tendency indicated by the work of the Stanford investigators.

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1 Lehman, A. J., and Hanzlik, P. J.: Proc. Soc. Exper. Biol. Med., 30:140-143 (Nov.), 1932.

II*

The Growing Complexities of Allergic Theory.—Conventional allergic diagnosis and antiallergic "desensitization" are based on the implied theory that each and every natural alien biological product is an antigenic unit and that it produces qualitatively identical allergic reactions in all organs and tissues of the same hypersensitive individual. As a corollary to this implied theory, the intracutaneous injection of a pollen extract, for example, is a logical diagnostic method to determine the specific pollen causing the internal allergic symptoms, and subcutaneous injections of this extract is the logical counterimmunizing technique. This conventional logic is today challenged by laboratory research.

Biochemical fractionation has demonstrated that all natural plant, animal and microbic products thus far studied are polyvalent allergic excitants, complex mixtures of type-specific, species-specific, genus-specific, and relatively nonspecific, lipoids, carbohydrates and biological colloids. These presumably monovalent fractions are often of widely different taxonomic distribution in nature.

Of equal clinical significance is the recent demonstration that the different organs and tissues of the same individual are not of the same biological specificity. Organ-specific proteins in the eye, in the thyroid gland and the kidney, for example, have been alleged and confirmed by numerous investigators, as well as organ-specific lipoids in the brain, kidney, and liver. There is the suggested possibility of organ-specific carbohydrates. Although such data are as yet too few for a detailed clinical theory, no clinical allergist dare longer assume that the basic specificity of the skin is necessarily identical with that of the bronchial musculature, nor that this musculature, in turn, is immunochemically identical with other internal tissues.

These presumptive organ-specific differences throw doubt on the conventional theory that allergic reactivity is qualitatively the same in all tissues of the same individual. Local reactivity is conceivably against the "specificity differential" between the extraneous agent and the local cells. The "allergic skin differential" of a given pollen may well be qualitatively different from its dominant reacting fraction or differential in the lungs. If so, skin reactivity and bronchial reactivity are no longer necessarily qualitatively parallel.

A lack of invariably reliable diagnostic parallelism between the skin test and internal symptomatology has long been recognized by professional allergists.[1] Recent tissue analyses merely suggest a plausible explanation for this seeming physiological paradox.

Recognition of the multivalent nature of natural biological products has suggested a conceivable undesirable "therapeutic vicious circle" in routine "desensitization" techniques. It is alleged that relatively few patients are equally hypersensitive to the globulin and albumen fraction of the same pollen.[2] Theoretically, therefore, the

1 Feinberg, S. M.: J. A. M. A., 95:1665, 1930.

2 Rappaport, B. F., and Johnson, C. A.: Proc. Soc. Exper. Biol. and Med., 46:771, 1929.

* Part I of this series was printed in the February California and Western Medicine, page 116.